WHAT IS CLAIMED IS:

1. A semiconductor wafer comprising

a silicon wafer which is doped with hydrogen, and said silicon wafer having a hydrogen concentration which is less than $5*10^{16}$ atcm$^{-3}$ and greater than $1*10^{12}$ atcm$^{-3}$.

2. A method for producing a silicon semiconductor wafer comprising

pulling a silicon single crystal from a melt, in the presence of hydrogen, using the Czochralski method, wherein the silicon single crystal is pulled under a hydrogen partial pressure of less than 3 mbar; and

separating the silicon semiconductor wafer from the silicon single crystal.

3. The method as claimed in claim 2, comprising

doping the silicon single crystal with nitrogen and producing a nitrogen concentration of $5*10^{12}$ atcm$^{-3}$ to $5*10^{15}$ atcm$^{-3}$.

4. The method as claimed in claim 2, comprising

placing a cooled heat shield around the silicon single crystal; and

cooling the silicon single crystal with the heat shield, for a period of time within which the silicon single crystal cools from a temperature of 1050°C to a temperature of 900°C in less than 120 min.

5. The method as claimed in claim 2, comprising

subjecting the semiconductor wafer to a heat treatment in an atmosphere which contains less than 3% by volume of hydrogen and the balance being argon.

6. The method as claimed in claim 2, comprising

subjecting the semiconductor wafer to an oxidation treatment.